Quaternary Geologist and Geomorphologist

NEWSLETTER OF THE QUATERNARY GEOLOGY AND GEOMORPHOLOGY DIVISION

Volume 30, Number 1

March 1990

RESULTS OF 1989 DIVISION ELECTION

Division officers and Panel members elected for 1990 are:

OFFICERS:	
Chairman	Kenneth L. Pierce
First Vice-Chairman	Richard F. Madole
Second Vice-Chairman	David Mickelson
Secretary (continuing term)	John E. Costa
PANEL MEMBERS (1989-91):	Deborah R. Harden
	William D. McCoy
	John D. Vitek
CONTINUING PANEL MEMBERS (1988-1990)	
	Julie Brigham-Grette
	Vance T. Holliday
	Karen L. Prestegaard
	W. Hilton Johnson

QUATERNARY GEOLOGY & GEOMORPHOLOGY DIVISION STATEMENT OF FINANCIAL CONDITION September 30, 1989

Division Fund Balance 12/31/88	$ 100.27	
1989 Division Dues Income	5933.00	
		$ 6033.27
Division Expenses:		
Composition & printing newsletters	1450.67	
Member labels	90.00	
Printing ballot	88.80	
Prining biodata	88.80	
Postage, handling & envelopes	805.40	
Awards certificates	6.14	
Refreshments - '88 Ann. Mtg.	85.00	
Total division expenses		2614.81
Division Fund Balance 9/30/89		$3418.46

J.HOOVER MACKIN APPROPRIATED FUND STATEMENT OF FINANCIAL CONDITION September 30, 1989

Fund Balance 12/31/88	$ 7909.85	
Earnings through 9/30/88	332.19	
Total Fund Resources		$ 8242.04
Grant Awards:		
Garrett Jackson	500.00	
Andrew Fox	500.00	
		1000.00
Fund Balance 9/30/89		$ 7242.04

MANAGEMENT BOARD MEETING ST. LOUIS, NOVEMBER 1989

The Management Board of the QG&G Division met on Monday, November 6, 1989, in the Adams Mark Hotel, St. Louis, MO, during the Annual GSA Meeting. Attending were: Dave Mickelson, Vance Holliday, Julie Brigham-Grette, Ken Pierce, Vic Baker, Bill McCoy, Jack Vitek, Rich Madole, Gail Ashley, Jim Knox, and Dale Ritter.

The meeting agenda included the following items: (1) approval of minutes of the 1988 Management Board Meeting, (2) verification of 1989-1990 election results, (3) current financial status of the Division, (4) the low rate of participation of members in Division awards nominations, (5) owing to the increasing cost of the annual Division luncheon, it was decided that the Division business meeting and awards presentation would take place during the hour preceding the annual cocktail party, (6) empowering the Chairman to appoint a committee of past chairmen and others he selects to address issues of the level of NSF funding and the general status of Quaternary Geology and Geomorphology, (7) plans for the 1990 Annual Meeting in Dallas. Actions taken on some of these items will be discussed further in this or in future newsletters.

HOW TO HAVE INPUT TO THE DIVISION

1. Submit nominations for Division offices and awards.
2. Submit suggestions, gripes, etc., for consideration by the Division Management Board.
3. Submit contributions to the Division Newsletter.

Correspondence to the Division may be sent to our continuing Division Secretary:

John E. Costa
Cascades Volcano Observatory
U.S. Geological Survey
5400 MacArthur Blvd.
Vancouver, WA 98661

Or you may write directly to the Division Chairman (who changes each year). The present Chairman is:

Kenneth L. Pierce
U.S. Geological Survey MS, 913
Box 25046, Federal Center
Denver, CO 80225

Newsletters are mailed in February and August of each year. Members are encouraged to use their Division newsletter to communicate with other members. Deadline for the February

Newsletter is January 15 and July 15 for the August Newsletter. Please send information to the Newsletter Editor at the following address:

William E. Scott
Cascades Volcano Observatory
U.S. Geological Survey
5400 MacArthur Blvd.
Vancouver, WA 98661
Phone (206) 696-7909

1989 QG&G DIVISION AWARDS

Presentation of the Kirk Bryan Award to Kevin M. Scott

Citation by Dick J. Janda

U.S. Geological Survey Professional Paper 1447A, "Origins, Behavior, and Sedimentology of Lahars and Lahar-Runout Flows in the Toutle-Cowlitz River System," is impressive by any reasonable standard of comparison. The fact that it was prepared by an author who is officially considered by the USGS as "part-time" is an embarrassing source of inspiration for us "full timers."

Dr. Kevin M. Scott's Kirk Bryan Award-wining paper is an exceptionally influential publication. I feel fully justified in using such strong modifiers because his paper quickly had major, widespread influence upon both basic science and hazard mitigation. Even though the Open-File version of this report was released only four years ago, its results and conclusions are already being widely applied throughout the Cascade Range, as well as in Latin America, Japan, Indonesia, and the Philippines.

Kevin's paper caused geologists and hydrologists to realize that stratigraphic studies and debris flow-routing models must take into account the fact that large channelized granular debris flows typically undergo major downstream changes in volume and rheology. The detailed field observations and particle-size analyses contained in Kevin's report have provided theoreticians with new insights for selecting appropriate constituative equations for describing debris flow behavior. Kevin's descriptions also provide valuable criteria for recognizing volcanic debris flow deposits in similar geologic settings. Among the natural hazards implications of Kevin's paper is the recognition that potentially devastating lahars at several Cascade volcanoes have occurred much more frequently than previously recognized. The recurrence intervals of these lahars are only a few hundred years and, therefore, fall within the time span commonly used for long-term planning. Indeed, the long-term constraint upon development along some river valleys in the Pacific Northwest is a design lahar, rather than a storm-induced design flood.

One reason why Kevin's paper has been so influential is that it is clearly written and well documented with photographs, line drawings, and tables. Kevin is not only an accomplished author, he has also worked periodically as a USGS report specialist, and he is, therefore, intimately familiar with all the legitimate and devious ways of pushing a paper through the often tedious Geological Survey review process. In any case, this paper has applied new polish to the already brilliant career of Kevin Scott.

Rather than merely reviewing Kevin's career in depth, I should now like to discuss briefly five circumstances that I believe had to be juxtaposed in order to account for the very special qualities of "Origins, Behavior, and Sedimentology of Lahars and Lahar-Runout Flows in the Toutle-Cowlitz River System." These same five circumstances were probably key elements in the recipe for many successful scientific papers because science, perhaps much more than art, strongly reflects history and the author's environment. The five circumstances that fortunately and fortuitously were juxtaposed in 1980-1982 were the following: (1) The author's skill and knowledge, (2) the author's availability, (3) the occurrence of a special event, (4) a strong supporting cast, and (5) the author's industry, persistence, and patience.

With regard to the first circumstance, by 1980, Dr. Kevin M. Scott was a world-renown expert in sedimentology. He had diligently applied himself to formal studies at the University of California in Los Angeles and the University of Wisconsin. Through professional work with the University of Wisconsin, Richfield Oil Company, and the U.S. Geological Survey, he had wide field experience and had published 3 abstracts and 19 papers on sediments and sedimentary rocks of the western United States, South America, and Europe. He had observed the sedimentary and geomorphic consequences of exceptionally large water floods in California. He had also studied debris flow deposits that ranged in age from a few hours old to several tens of millions of years old. In retrospect, it was fortunate that Kevin had not worked extensively in recent volcanic terrain because he could approach his work along the Toutle River with no preconceived prejudices. Moreover, he was not initially distracted by having volcanic or flood hazard assessment responsibilities.

In terms of availability, it was extremely fortunate that Kevin was between major assignments when the 1980 eruption of Mount St. Helens occurred. He was quickly able to devote a high percentage of his considerable energy to the study of the 1980 and older lahars of the Toutle-Cowlitz River system. That effort needed to be sustained through 1982 because eruption-induced channel erosion created numerous valuable exposures, but then quickly destroyed them. Bulldozers engaged in flood mitigation work played a similar but less important role. In any case, critical evidence was often visible for only a few short weeks.

The special event, in this case, was actually a series of events. The initiating eruption of Mount St. Helens on May 18, 1980, was termed by some journalists as the "scientific event of the century," but the eruption-induced channel erosion and a much smaller eruption on March 19, 1982, were also pivotal to Kevin's paper.

In terms of a supporting cast, Kevin was able in part to build upon the earlier lahar descriptions and the well-established eruption chronology of Mount St. Helens worked out by Don Mullineaux and Rocky Crandell over the preceding 20 years. The enormous landscape changes wrought by the 1980 eruption, and the lingering hazards that those changes posed to downstream populations, attracted large numbers of geologists and hydrologists to Mount St. Helens. Their concurrent work on eruption mechanisms and timing, lahar dynamics, sediment transport, and channel evolution helped to provide useful background material for Kevin's work; the post-eruption publications of about 45 colleagues are cited in Kevin's paper. The presence of a large, energetic group of scientists during field data collection also resulted in numerous scouting tips about new exposures and plenty of sounding boards for critical ideas and interpretations.

Finally, the excellence of Kevin's report reflects his willingness to work long and hard on report preparation as well as on field data collection. I remember that Kevin was constantly evaluating alternative presentation schemes, word choices, and figure layouts. I also remember his periodic frustration with the fact that completion of his work seemed to be an asymptote. This frustration was particularly evident when weekend warriors and high graders started publishing short articles on the 1980 lahars with incomplete observations and misleading conclusions. However, Kevin had a clear vision of what he wanted his paper to be; more importantly, he had the persistence and patience needed to pursue that vision.

Kevin, thanks for a job well done! The Quaternary Geology and Geomorphology Division is pleased to confer upon you the Kirk Bryan Award for U.S. Geological Survey Professional Paper 1447A, "Origins, Behavior, and Sedimentology of Lahars and Lahar-Runout Flows in the Toutle-Cowlitz River System." Congratulations.

Kirk Bryan Award Acceptance Speech by Kevin M. Scott

Thank you, Richard, ladies and gentlemen. The psychology of most people at moments like this is probably much the same. Among many, Stephen Jay Gould and Allan Cox reveal that award recipients are really embarrassed to be selected from among their peers. I can assure you this is true, but you'll have noticed that the embarrassment is rarely so acute that the award is refused. Unclaimed Kirk Bryan awards are not stacking up in Boulder.

The recent eruption of Mount St. Helens has been called the geological event of the century, and it is certainly that in its ability to galvanize public interest. Consequently, I hope a few personal reflections, scientific and otherwise, will interest you.

The initial chaos of 1980 at St. Helens was described by Don Mullineaux when he accepted an award for the summary volume, Professional Paper 1250. I was a little later on the scene, but my

early memories are of an extreme intensity of the staff of the embryonic volcano observatory. Like most such efforts, yesterday's trials magically become today's moments of great nostalgia. (I'll try not to get maudlin on you here.) We often referred to the field work as elephant-hunting, so numerous and mind-boggling were the findings. Landscapes evolved before our eyes as the rains came in late 1980, gulleys headcut at rates of feet per second, and flowing sediment often moved the water rather than the reverse.

The mountain provided tragedy for some, riches for a few--mainly T-shirt merchants, but fascination for many. Early Sunday morning, at 0832, May 18, was an ideal time for both recording the event and minimizing casualties. A parade was scheduled that afternoon to protest the hazard-zone boundaries. It never occurred because the parade route was then beneath a debris avalanche. However, that parade illustrates the real PR problem with hazard analysis. The messenger becomes the problem, even when the evidence is as plain as a volcano smoking and looming above. This reaction gets worse as we extrapolate the periodically violent past of now-peaceful Cascade volcanoes to the future. It's one thing to prove the need of land-use planning but quite another to convince those with the land. Although the Survey is a research rather than an advocacy or enforcement agency, this does not get us off the hook of the moral obligation to explain our findings to the public. We can then sleep well, even with the knowledge that it will take a Hurricane Hugo, California earthquake, or a Mount St. Helens to really make the case.

Fortunately for those of us with finite lifetimes, volcanoes are both constructed and destructed by catastrophic processes, the latter via the evolving theory of collapsing volcanoes about which I won't be able to resist saying more shortly. And, both processes are preserved in the stratigraphic record in surrounding river systems to a remarkable degree. Those of us trying to unravel this record of volcanic sedimentation had another, more pleasant PR problem. It seemed that every resident of Cowlitz County was sure they knew more about the volcano's history than we did, and many felt compelled to tell us about it. This could be called the Harry Truman syndrome. Some of this native wisdom proved both fascinating and accurate, just as Swiss herdsmen had deduced the extent of Pleistocene glaciation before geomorphologists arrived. In one case at St. Helens, landowner N.B. Gardner had deduced that vertical tree molds extending through four ancient mudflow deposits proved that the sequence had occurred in a very short period of time. This information was especially useful, because other evidence showed that the flows had formed from ancient lake breakouts, just as the lakes formed by tributary blockages in 1980 were then threatening to do.

Once again the earth itself had proved to be a very good laboratory and had also provided a pretty good flume, the Toutle River. Disciples of F.J. Pettijohn may say "Amen." It certainly does no harm to be reminded, as we were yesterday by Bob Dott and Reid Bryson, of the yet-to-be-outdated ideas of T.C. Chamberlin and G.K. Gilbert, particularly those on the "naturalistic method" and the usefulness of multiple working hypotheses. We can be sure that Pettijohn must have been greatly influenced at Chicago by the experiences of J Harlan Bretz in the Channeled Scabland. I am as enamored of modeling as the next person but can appreciate James Burke's reminder that there is more computing power between the average pair of ears than in all linked supercomputers now existing. The between-ears model is portable and can even be taken in the field. Both speed and storage capacity can decline with age, unfortunately.

In another example of native wisdom at St. Helens, a resident names Ted Conradi had recorded the times of inundation by May 18 flows and their deposits, as well as the surface character of the flows, as they progressively buried an overturned cable spool he had used as a picnic table 40 miles downstream from the volcano. The subsequent exhumation of the spool by erosion led to recognition of the feature now known as the sole layer of a debris flow, which was then being interpreted as the deposit of a separate flow.

St. Helens certainly has been a wonderful lesson in applying Occam's razor, tempered by Einstein's advice that things should be as simple as possible, but not too simple. A humbling lesson is the variety of ways huge debris flows capable of inundating valleys long distances from volcanoes can be formed. A relatively new concern is that, in accord with the theory of collapsing volcanoes, the debris avalanches from sector failures can transform directly to the largest flows, just as numerous past flows have done from Mount Rainier. And this at a frequency normally considered in planning. Speaking of Rainier, may that gigantic mass of unstable rock above Seattle and Tacoma retain its temporary stability for many long years. Any scientific interest in its failure would be cold comfort indeed. Although land-use planning may have been successfully resisted when sector collapse does occur, the insurance industry and the process of environmental impact assessment hopefully will have slowed the projected mushrooming of population near the volcano and in the valleys downstream from it. A real worry is that precursory volcanic activity need not precede a sector collapse, and thus no warning will be possible. Nonmagmatic seismicity and any number of other factors could trigger the event.

The research you honor today was inspired by the work of Dwight Crandell and Ken Fahnestock at Mount Rainier; it was made possible and kept honest by Richard Janda; and its completion was nurtured by John Costa. Let me comment also on how appropriate it is to honor the memory of Ken Fahnestock, whose ashes now reside in the White River on Mount Rainier, by the way. An unforgettable experience is that of awakening with Ken to the sound of boulders crashing in the White River and speculating on the "fun" we would have wading the river as the glacially fed discharge increased throughout the day. Skills honed in my all-too-brief work with Ken were many, but one that sticks in my mind was how actually to break even with the Survey per diem of the time--spend the night in an all-night movie as opposed to a cheap motel.

My St. Helens experience is also indebted for any scientific enthusiasm to previous work with Bob Dott in the Antarctic and South America, with Creighton Burk and Jim Brice in the Aleutians and Arctic, and with Clem Nelson in the Basin and Range. A latent sense of humor was enhanced by William C. Putnam (he remains too intimidating to be called "Bill"); and a degree of patience and tenacity probably relates to a particular death march known as the series of three field geology courses at UCLA. Mason Hill, chief geologist of what is now ARCO, once gave me a classy job based solely on a grade in one of those courses, and rightly so, I think. And yes, my original interest in debris flows must be blamed on one Bill Bull. What he called "intermediate deposits" proved to be very interesting when again seen in the context of hyperconcentrated transformations of granular debris flows. After all this, however, I must admit that Richard was right in his introduction; it really was mainly a fortuitous conjunction of both colleagues and the circumstances created in 1980.

My original theme was going to be the St. Helens experience in contrasting assumption- and experiment-based modeling with field work and multiple working hypotheses. (Especially as pertaining to catastrophic events and problems of similitude.) Victor Baker beat me to similar conclusions using the Channeled Scabland as the example. But not to worry--let me just refer you to his abstract from the Spokane meeting, as well as to the "naturalistic method" of Chamberlin. Clearly, modeling is the ultimate tool in projecting surficial processes and their effects; there is just a temptation to be premature.

A second discarded theme was going to be my reform of certain dietary habits at the Observatory. A great contribution to science may be in thereby extending the productive life spans of certain world-class scientists. Richard had the good taste to leave several embarrassing items out of the citation, so I can also put the rest of this theme on the cutting-room floor.

Otherwise, my fellow researchers at the Cascades Volcano Observatory set a difficult standard indeed. Your tax dollars are being very well spent. I often wonder what motivates work of this intensity. I intuitively know it's not a matter of repressed libidos, Freud to the contrary. There actually is probably no better answer than that of Michael Church when he received this award. He was very accurate indeed in simply saying this work is fun. Or, as Dr. Costa is overly fond of saying, at a pause in some murderous scramble, "Can you believe they're paying us for this?" I usually assume that's a rhetorical question.

Well, geomorphology may not be quite as uncluttered with complications as in Kirk Bryan's day. But I'm sure he would have coped nicely, thank you, with the pit bulls of marijuana growers, the occasional paranoid survivalist, and low-bid helicopters. Although time may change a few of the problems, the sense of wonder certainly is still here. In conclusion, let me just say thiank you, Division and Society, for a lovely stack of dry wood for my campfire.

Presentation of the Distinguished Career Award to Clyde Wahrhaftig

Citation by Dick Janda

Clyde Wahrhaftig's career with the U.S. Geological Survey and the University of California at Berkeley is long and varied, as well as distinguished; so please make yourselves comfortable.

Among my pile of socks, carefully tucked in with those with torn toes and tattered heels, is a simple political cartoon that appeared in several major American newspapers on or about the 23rd of November 1963. That cartoon shows an empty wooden rocking chair and bears the famous quotation, "Ask not what your country can do for you; ask what you can do for your country." Late one night, a ball point pen and I nearly conspired to deface that cartoon, but I chose instead to write on the back, "Insert science and a wider global focus, and this phrase is something that Clyde might say." As I review quickly the distinguished career of Clyde Wahrhaftig today, I hope that you find that it stands in refreshing contrast to a world which is marked too often by publication of numerous versions of the same paper in second rate journals and unabashed huckstering of personal credentials before funding agencies and peer review panels.

The career of Clyde Wahrhaftig is distinguished by important contributions in three areas--1) basic research related to an exceptionally broad spectrum of earth science topics, 2) creative application of earth science principles to the solution of resource management problems, and 3) thoughtful and patient introduction of many people from widely diverging social backgrounds to the wonder, beauty, and social significance of geology.

I think that it is particularly appropriate for this society (The Geological Society of America) and this division (The Quaternary Geology and Geomorphology Division) to bestow the Distinguished Career Award on Clyde Wahrhaftig for at least two reasons. First, Clyde is a geologist. That statement may seem trivial, but in recent years, geomorphology has become increasingly influenced by hydraulics, hydrology, soil science, statistics, and other disciplines. Clyde is cognizant of those disciplines and often utilizes them. However, his research activities, and indeed the very foundation of American geomorphology, are deeply rooted in basic field geology. The second reason is historical. Between the late 1950's and the early 1970's, many North American geomorphologists, especially those in the U.S. Geological Survey, were polarized into process-oriented and history-oriented camps. Clyde diplomatically remained out of that fray; nevertheless, his papers and lectures laconically , but forcefully, argued that effective studies of landscape development required application of tools from both camps. That position is now widely accepted, and indeed forms the basis for much proposed work under the U.S. Global Change Research Program.

Now let's quickly review Clyde's research accomplishments.

As I have indicated, Clyde's research is rooted in systematic and meticulous field observations, supported by a scholarly understanding of basic chemistry and physics. His work typically goes beyond mere site-specific description to the formulation and testing of hypotheses of widespread applicability. The 1959 GSA Bulletin article, "Rock glaciers in the Alaska Range," was co-authored by Clyde and Allan Cox and inspired a world-wide surge in research on rock glaciers. Alaskan geologists now working for the orderly development of Alaska's resources tell me that Clyde's published work on the Quaternary history, landslides, and coal resources of the Nenana River gorge and environs are valuable tools that have stood the test of time, as well as an enormous increase in roadcut exposures. This division conferred the Kirk Bryan award on Clyde for his 1965 GSA Bulletin article, "Stepped topography of the southern Sierra Nevada, California." That paper stirred much discussion, among active Sierran mappers; more importantly, it challenged the universal applicability of dynamic equilibrium, and it implicitly raised the issue of thresholds several years before that topic was popularized by others. Formal papers on physiographic subdivisions of Alaska and topographic development of the California Coast Ranges also triggered much additional research.

The yet-to-be-published works of Clyde Wahrhaftig promise to be worth the wait. Starting in 1960, his detailed descriptions of the topographic evolution of the Nenana River badlands alerted many students to the importance of episodic transport processes and temporary sediment storage in long-term landscape development. Fortunately, Clyde has recently assured me that papers on badland erosion and coal formation in continental environments are "coming on line."

Clyde's research has gone deeper than surficial deposits and landforms; his own careful petrography provided critical insights for his papers on the Precambrian of Alaska, the stratigraphy and structure of the Marin Headlands, and the stepped topography of the Sierra Nevada.

Clyde's published reports, draft manuscripts, and off-hand comments have provoked a great number of worthwhile investigations and papers. In the world of science, awards for excellence are typically based upon published products, or, to draw an analogy with the world of sports, goals scored. Yet, in sports a great number of highly esteemed athletes are noted for the ways in which they assist their teammates in scoring. If science formally recognized the importance of such teamwork, I am sure that Clyde would be among the all-time "assist" leaders, and a sure shot for the Hall of Fame.

Now, let's move on to the ways in which Clyde Wahrhaftig applied his knowledge to societal problems.

Clyde has always been keenly aware of the relevance of his work to immediate societal problems. His early work in Alaska was important in defining Alaskan coal reserves and in mitigating landslide hazards along the Alaskan Railroad. Through citizen action groups, Clyde was also influential in land-use decisions in the rapidly urbanizing San Francisco Bay area. Furthermore, he served as the first chairman of the GSA's Committee for the Environment and Public Policy.

During the late 1960's and 1970's, Clyde Wahrhaftig energetically applied his knowledge of process geomorphology and Quaternary history to the formulation of forest management practices whuch were designed to help preserve fragile landscapes and ecosystems, and at the same time to allow for a viable sustained forest products industry in California. Clyde, along with a number of his students and colleagues, critically reviewed the existing literature, made numerous site inspections, and then prepared and distributed a number of important position papers.

Clyde eventually became a trusted adviser to key members of the California Legislature, and in 1975 he was appointed by Governor Jerry Brown to the California Board of Forestry. At that time, a number of statistically sound paired watershed experiments had been underway for 10 or more years in forested areas of the country, and geotechnical engineers were performing critical experiments on resisting and driving forces on forested hillslopes. However, results of these studies were not widely applied; moreover, Clyde's appointment to the Board marked the first time that the long-term perspective and holistic, interdisciplinary approaches of geomorphology were systematically used to formulate and implement forest practices legislation. Conversations and serious discussions about cumulative impact broke out in all sorts of places. Clyde's presence on the Board served as a catalyst for legislation and practices that had influence far beyond the California border.

To appreciate fully Clyde's teaching accomplishments, we need to consider on- and off-campus recruitment and inspiration, as well as more traditional field and classroom instruction.

Throughout his entire career, not just during the 24 years that he served on the faculty of the University of California at Berkeley, Clyde attracted first generation college students along with students from families with long-standing academic traditions to careers in the earth sciences. Many of Clyde's students had titles like field assistant, physical science technician, geologist, and even bus driver, rather than upper classman, graduate student, and so forth. All his students believed that Clyde really wanted to teach; he wanted to nurture and challenge students, not merely to test them. His lectures were always informative although sometimes not polished. Nonetheless, many students retained Clyde's mimeographed (later xeroxed) lecture notes as valued reference materials for decades. Field trips with Clyde were always memorable and well integrated with classroom materials. Clyde encouraged students to become knowledgeable of hydrology, hydraulics, soil mechanics, soil genesis, and related disciplines, and to apply that knowledge to their own research. We all remember being gently but thoroughly introduced to the brutal fact that good technical writing typically is synonymous with rewriting.

In a personnel document dated March 1, 1989, Clyde modestly describes his aptitude for teaching as "A moderate skill, painfully acquired over the last 22 years..." Clyde I would like to point out that 1967 was one year after two of your eight PhD students received their degrees. We might be insulted, but 1967 was also fully 17 years after you recruited and started to train Allan Cox, probably your most important student. Your influence on the careers of Joe Birman, Pete Birkeland, and others also started long before 1967. Thus, your former students respectfully suggest that you engage in some rewriting to reflect your strong instincts and considerable skill for teaching.

Yet another way in which Clyde Wahrhaftig's career is distinguished is by the ways in which he sought to expand the traditional student clientele. He actively challenges students and professionals from disciplines peripheral to traditional geology and geophysics to become more knowledgeable of the roles that geology can play in their careers. Clyde has frequently taught adult education classes on a variety of earth science topics, and has published several general-audience articles and guidebooks.

Finally, Clyde has been especially active in promoting minority participation in earth science. Clyde started recruiting scientists at an early age by taking disadvantaged black grade school students on weekend hikes and even taking some to geology summer camp. He also worked to educate science teachers in the minority community. In 1971, while on the GSA Council, Clyde was appointed the chairman of the ad hoc committee on Minority Participation in the Earth Sciences. He was later active in the AGI minority scholarship program and in the USGS summer minority internships.

In summary, Clyde Wahrhaftig is worthy of the Distinguished Career Award because of the ways in which his research has elucidated basic geomorphic principles, because of the ways in which he brought geology to people, and because of the ways in which he brought people to geology.

Clyde, thanks for your many contributions! Congratulations.

Distinguished Career Award
Acceptance Speech by
Clyde Wahrhaftig

I

If my career is distinguished, it is because of those I worked with. Little in my career has been of my own initiative, other than choosing geology and taking the Caltech entrance exam in 1937. Others propelled me into the activities that seem to have won me this award. And I never would have succeeded without their help, for example, Dick Janda, who just introduced me. Dick mentioned my work on the California State Board of Forestry. Whatever success I had on that board was because, before I ever accepted that appointment, I went to my former students and colleagues at the U.S. Geological Survey, and got their promise of help. Dick Janda was the most crucial of those colleagues, for he was in charge of the USGS Redwood National Park study, and the Forestry Board spent much of its time then on timber harvests adjacent to the park. If the logging industry knew of the cahoots Dick and I were in, and had noticed what was public record--that I was a WAE employee of the Geological Survey, I am sure they would have been screaming "conflict of interest" to get me off the board.

Dick has spoken about me and Allan Cox, about our paper on Rock Glaciers in the Alaska Range, and about how my convincing Allan to go into geophysics led to the discovery of the magnetic polarity time scale. These stories are in the public record, in my Foreward to the recent book by John Giardino and others on Rock Glaciers, and in Bill Glen's book The Road to Jaramillo. If I go down in history at all, it will probably be as a footnote to the development of Plate Tectonics, as the person who talked Allan Cox into choosing a career in Earth Science.

II

I am going to say more about my relations with Allan Cox. Nearly everything I did professionally after we met was strongly influenced by him.

I was introduced to Allan in the Spring of 1950 by friends who wanted me to consider him as a possible field assistant in a 5-man party that I was leading that summer in the Alaska Range about 50 miles south of Fairbanks. Allan was a junior Chem major at U.C.--Berkeley. I had intended to hire only geology majors, in order to size them up as future USGS field geologists. However, I found Allan so stimulating conversationally, and sharing so many of my tastes in music, literature, and politics, that I decided to hire him. He turned out to be a far more perceptive geological observer than any other member of the party, including the other geologist. He was also resourceful, capable of handling himself in the field, and a superb cook. When I got hit on the head by a helicopter blade that summer, he performed the necessary first aid.

I asked him to be my assistant again in 1951, and persuaded him to consider geology as a career. So he avoided graduation in chemistry by earning incompletes in two required courses. This was during the Korean War, and only students in the upper quarter of their class were deferred from the draft. Allan, of course, placed in the upper fraction of one percent of his class, but when we got back in the fall, his class had graduated. He had no class to be in the upper quarter of and was drafted. He spent two years in the Signal Corps, perfecting his education in electronics.

He was also my field assistant in 1954, after his stint in the Army. In fact, we planned that field season together. I had written a paper on rock glaciers, which I was field checking in 1954. He contributed so much in observations and ideas while we were in the field, that I told him as school started that I would list him as co-author for the contributions he had already made. But he would only be a co-author if he participated to the end; so for the next two years we worked on the rock glacier paper together. His contributions were the basis for much of the reputation that paper has. They were made, by the way, when he was still an undergraduate, and his work, while in school, was unpaid.

After completing his Ph. D. thesis in paleomagnetism at Berkeley under John Verhoogen, Allan went to Menlo Park to set up the paleomagnetics lab, with Dick Doell (this was the lab where the polarity time scale was discovered, largely as an outgrowth of Allan's Ph.D. thesis). A year later, in 1960, I went to teach at Berkeley. I think I was invited to Berkeley partly because of the rock glacier paper, mainly I am sure because of Allan's contribution to it, and partly because Allan and Mark Christensen, both graduate students then, praised me to the faculty as a superb teacher. (If I am a good teacher, it is only in a field situation. As all my students will attest, I am a lousy lecturer, and had to hand out lecture notes to be sure the students understood me.)

One of the first graduate students I worked with at Berkeley, beside Dick Janda, was Brent Dalrymple. Mark Christensen and I introduced Brent to Allan Cox and Dick Doell, and he ultimately joined their project, providing an essential ingredient for its success-precise ages.

III

Allan Cox in turn helped my career in many ways. My interests in environmental problems rose initially out of the summers I spent mapping the geology of Tower Peak Quadrangle, in northern Yosemite Park and Emigrant Wilderness. I discovered that marvelous area on a backpacking trip with Allan and my brother-in-law in 1951. I started mapping its geology at the end of a 10-day trip with Allan into the Yosemite back-country in 1955. From 1962 on, he generally managed to spend several days in the field with my party while I was mapping the quadrangle, sometimes bringing in as many as 10 fellow visitors. And he helped finance my field work there.

Allan had a lot to do with my being on the California Board of Forestry. He lived in a cabin in a redwood forest on the crest of the Santa Cruz Mountains. In 1969, he and his neighbors discovered that a timber company with a rather bad environmental record was about to log the land across the creek from them, which constituted both their view and the source of their water supply. Allan asked me to help him evaluate the potential for damage to the water supply. We spent a couple of days looking at some previous logging by this company a few miles downstream, and just about doubled the then-existing information on the relation of logging roads to landslides in the California Coast Ranges. His and his neighbors' efforts started with appeals to the county officials, and went on to the state legislature when the county was sued by the timber company, backed by the entire timber industry. The ultimate outcomes of Allan and

his neighbors' efforts were, first, a law permitting a few urban counties to enact stronger timber harvest rules than the State's; and second a State Supreme Court decision that the then-existing State Forest Practice Act was unconstitutional, because it in effect asked the foxes to look after the chicken-coop. A new state law had to be enacted. Allan and I were asked to testify before the Assembly Committee considering a new act.

We spent that Christmas vacation in Humboldt County, lurking through cutover company lands alongside the National and State Redwood Parks, comparing erosional phenomena in cutover and untouched forests where all other factors were the same, and I presented our testimony at a hearing a month or two later. We turned out to have some influence on the resulting legislation, which was actually stronger than I had proposed at that hearing. When Jerry Brown became governor, Claire Dedrick, his Resources Secretary, who had been one of Allan's neighbors in the timber fight, asked me to serve on the Forestry Board that administered the new law. I urged her to ask Allan instead, because he could think on his feet much better than I can. So she telephoned him, and he proved my point by convincing her that I should be the one on the Forestry Board.

In 1971, as Allan's tenure on the Council of the Geological Society of America was coming to an end, I was put on the GSA Council. I suspect that he had much to do with my going on the Council, and I am sure that he was responsible for my being given its two most innovative assignments: chairmanships of the brand new committees on Environment and Public Policy, and on Minority Participation in the Earth Sciences.

I think I accomplished the most on the Minority Participation committee, which included, among others, Lou Pakiser, Bill Bromery, Mac Gipson, and Bill Romey. We got the Minority Scholarship program going in AGI, and were the inspiration for the USGS Minority Summer Internship program, with which I was connected for several years in Menlo Park.

In 1978, when Allan was president of the American Geophysical Union, he told me one morning at breakfast that he was planning a "fun run" around Lake Merced in San Francisco during the AGU Fall meeting as physical exercise for the geophysicists. I told him that that wasn't a very intellectual way for geophysicists to get exercise, and furthermore, considering what a competitive as well as sedentary lot most of them were, he might cause some coronaries. I offered instead, for their exercise, to write a walking guide to the outcrops in San Francisco that exemplified Plate Tectonics, that we could call "A Streetcar to Subduction," and he immediately exclaimed "Sold!" So the next six months I spent all my spare time walking around San Francisco, photographing, sketching, and writing about pillow basalt, chert, greywacke, and serpentine. The entire readership of EOS must know by now that I am the author of a book with that crazy title.

Finally, in 1984, when my cardiologist in Oakland was trying to cure a mechanical problem (a prolapsed mitral valve) by chemical means, Allan saved my life by getting me admitted into Stanford University Hospital, certainly the best garage in the country for a valve job.

IV

Receiving this award for longevity has made me realize that my time to do good is running out. So I have decided to use the opportunity you have given me, by gracing my career with the adjective "distinguished," to do a little good with the accolade.

The Committee on Minority Participation in the Earth Sciences recognized that one of our goals was to create role models, successful Black or Chicano geoscientists who would attract others to follow their paths. I am now going to provide a role model for a minority that has been demanding a modicum of the civil rights the rest of the country possess--a minority that has managed to survive largely because it is invisible. It is a minority to which Allan Cox and I belong. We are both homosexuals, and the force that caused us to do so much for each other, and because of each other, was homosexual love. The many of you who are familiar with the circumstances of Allan's suicide, would have gathered from those circumstances and our close association that this was the case. Most of the assignments I accepted--teaching at Berkeley, the GSA Council, the Forestry Board, for example--I did chiefly to keep his good regard. Allan was the only one of all my field assistants or students who ever had any indication from me that I am homosexual.

Now, when I say a role model, I don't mean that I am trying to convince young geologists to become homosexual. That is impossible, for one is either born with one's sexual orientation or acquires it in infancy. It is nothing one has any choice over whatsoever. And I would not wish on anyone the life of repression, self-doubt, and dissimulation that Allan and I had to go through, for example, hearing our peers all through our teens and college years making the butts of their most loathsome jokes "faggots" and "queers," and having to join in the laughter. Allan's work as a University dean kept him in the closet all his life.

No, the group whose attitudes I wish to affect are those of you who are not homosexual, but who may find yourselves with students, subordinates, or colleagues who are. I ask you to recognize that homosexuals can make as much of a contribution to science and humanity as anyone else. In the last 20 years the homosexual (or gay) community has moved out of the shadows, and there are gay student organizations on almost every campus. So it is likely that some gay students who enter geoscence will not be closeted as Allan and I were. You will have to deal with them as they are.

The other group whose attitudes I wish to affect are gay students who would like to become geoscientists, but are afraid to because they think being gay and being a geologist are incompatible. I want my life, and Allan's and my relationship, to tell them that this is not so. If they are lucky, as we were, their love and their careers will sustain each other. And I hope that, by making this revelation here, I contribute in some small way to the creation of a society with a sufficiently intelligent, open, and compassionate attitude toward sexuality that suicides such as Allan Cox's will be a thing of the past.

FRIENDS OF THE PLEISTOCENE
1990 FIELD TRIPS

South-Central Cell: March 30-April 1, 1990

The trip will be a transect across the alluvial valley of the Mississippi River. The first day includes a look at the world-famous Mississsippi Valley loess deposits on Crowley's Ridge, the Plio-Pleistocene Mississippi River channel deposits from the days when it was a braided stream and a coarse-grained meandering stream, and the buried soils that separate these units. The loesses and soils can be traced out onto the terraces, diminishing in number and thickness toward the modern streams. On the second day participants will examine archeological and vertebrate paleontological sites on the terraces, flood plains, and sand dunes of the valley, relating them to their paleolandscapes. The last day will be spent on the present flood plain of the Mississippi River and the braided stream terrace scarp that it is in the process of burying with overbank sediment. For more information please contact Peggy Guccione, Geology Department OH-118, University of Arkansas, Fayetteville, AR 72701, (501)521-4731.

Northeast Cell: May 25-28, 1990

The 1990 field excursion will focus on late Quaternary sites in northeastern Nova Scotia including interglacial, glacial, and late-glacial deposits. Of particular interest will be evidence for the Younger Dryas-Allerod climatic oscillation. Twenty-four sites have been discovered revealing a widespread organic horizon covred by a variety of sediments relating to remnant glaciers and periglacial solifluction activity. The beds record changing plant communities relating to rapid climatic changes. Climate change during the period from 14,000 to 10,000 yr B.P. is of unique interest to the Quaternary community of North America because of the likelihood of non-orbital forcing mechanisms, and its bearing on the problem of mammalian extinction. Nova Scotia provides a unique laboratory for the study of this important time in Earth's history. Contact Ralph Stea (Nova Scotia Department of Mines and Energy, P.O. Box 1087, Halifax, Nova Scotia, B3J 2X1, Canada, Phone 902-424-4700) or Bob Mott (Geological Survey of Canada, 601 Booth St., Ottawa, Ontario, K1A 0E8, Canada, Phone: 613-992-0644) for details.

Pacific Cell:

Copies of the guidebook for the 1986 trip to Death Valley are still available. "Field-trip guide to the Quaternary tectonics of Southern Death Valley, California, 44 p. Bennie Troxel, editor; Roland H. Brady III, Paul R. Butler, and Bennie W. Troxel, leaders. Available from Bennie Troxel, P.O. Box 127, Shoshone, CA 92384; $10.00 postage paid.

Southeast Cell: November 16-18, 1990

Jim Quinlin (Uplands Research Laboratory) will lead a trip on the geomorphology of Mammoth Cave, Kentucky, including some time in the cave. Details will be sent in a forthcoming announcement to those on the Southeast Friends' mailing list. If you would like to be on the mailing list contact SEFOP c/o Steve Kite, Department of Geology and Geography, West Virginia University, Morgantown, WV 26506.

Other SEFOP News

Waite Ostercamp (USGS) will lead the fifth SEFOP trip, which will examine the geomorphology and plant ecology of the Shenandoah Valley on September 13-15, 1991. Other trips have been suggested for subsequent years, but SEFOP is always interested in suggestions for good trips, especially in the deep South (part of the region they have not visited to date). Contact Steve Kite at the address above to add your name to the SEFOP mailing list, change your address, or lead a trip.

The third SEFOP field trip convened in Blacksburg, VA, on 17-19 November 1989. The trip focused on the surficial geology of the New River Valley in the scenic Valley and Ridge Province of southwest Virginia. Art Schultz and Hugh Mills were primary leaders with contributions by Kathleen Farrell, Scott Southworth, Robert Thompson, and Meyer Rubin. The first day was highlighted by heart-pounding hikes up giant (Pleistocene?) rock block slides and examination of the morpholgy and stratigraphy of sag ponds near the slide scar heads. Stops on the second day dealt with the geomorphology and genesis of mountain slope deposits near beautiful Mountain Lake. Approximately 50 Friends registered for the trip, but those who could not attend can obtain the field guide as USGS Open-File Report 89-635, edited by Art Schultz.

The field guide for the 1988 SEFOP trip that examined the Cenozoic geology and geomorphology of the southern New Jersey Coastal Plain is now available as USGS Open-File Report 89-159, by Wayne Newell and others.

NEW SIMPLIFIED NOMINATION PROCESS FOR DISTINGUISHED CAREER AWARD DEADLINE APRIL 15, 1990

The Distinguished Career Award was established in 1985 to recognize Quaternary geologists and geomorphologists who have demonstrated excellence in their contributions to science. This award complements the Kirk Bryan Award, which is for a single paper, by recognizing many years of distinguished contributions. The Distinguished Career Award is open to all Quaternary geologists and geomorphologists who have demonstrated excellence in their contributions to science. The recipient need not be a member of the Geological Society of America or the QG&G Division. This is the fifth year for the DCA; former recipients are Richard P. Goldthwait (1986), Aleksis Dreimanis (1987), A. Lincoln Washburn (1988), and Clyde Wahrhaftig (1989).

A more streamlined nomination procedure was adopted by the Management Board of the QG&G Division during its 1989 meeting. Nominations should be submitted to the Division Secretary and require: (l) a supporting letter of nomination, documenting the contributions of the nominee, (2) three letters or signatures of additional members supporting the nomination, (3) a resumé of the candidate (such as a photocopy from American Men and Women of Science, along with a bibliography of the nominee's most significant papers. The Division Chairman will appoint a Distinguished Career Award Committee to oversee the collection and completion of award nominations. The names of unsuccessful candidates proposed for this award will remain open to consideration without renomination for the three following years. Further consideration after this period will require renomination. The deadline for nominations is **April 15, 1990**.

1990 GSA SECTION MEETINGS-- ITEMS OF INTEREST TO QG&G MEMBERS

Northeastern: Syracuse, New York, March 4-7

Symposia

* Ice sheet margins and water: Deglaciation within marine and lacustrine basins
* Subglacial meltwater: Landforms and sediments
* High-resolution seismic and sedimentary facies analysis

Special poster session

* Classic field sites for teaching earth science in the Northeast

Cordilleran: Tuscon, Arizona, March 14-16

Symposia

* Quaternary paleoecology of Southwestern North America
* Environmental history of the American Southwest during the last glacial termination: The Black Mat

Field Trips

* Cenozoic stratigraphy and tectonics of the Safford, Tonto, and Payson Basins, southeastern and central Arizona
* Geomorphology and Quaternary geology of the Pitaycachi Fault, northeastern Sonora, Mexico
* Quaternary and environmental geology of the northeastern Gulf of California
* Quaternary geology and geologic hazards near Can˜ada del Oro, Tuscon, Arizona
* Late Cenozoic depositional history and geoarcheology, San Pedro Valley, Arizona

Southeastern: Tuscaloosa, Alabama, April 5-6

Symposium

* Modern coastal sediments and processes, and the geologic record: Ninth Symposium on Coastal Sedimentology

North-Central: Macomb, Illinois, April 26-27

Symposium

* Quaternary history of the Mississippi River

Field Trips

* Erosional processes along Lake Michigan shoreline
* Quaternary history of the Mississippi River

Rocky Mountain: Jackson, Wyoming, May 21-23

Symposium

* Late Pleistocene climate changes in the Rocky Mountains

Field Trips

* The Teton fault zone and Quaternary evolution of the Teton Range
* Late Tertiary and Quaternary faulting north and south of the eastern Snake River Plain

PENROSE CONFERENCE

New Methods for Dating of Geomorphic Surfaces

A GSA Penrose Conference, New Methods for Dating of Geomorphic Surfaces, will be held 12-17 October 1990 at the Sierra Nevada Inn at Mammoth Lakes, California. Conveners are Fred M. Phillips, New Mexico Tech, Socorro, NM 87801 (505-835-5540), and Ronald I. Dorn, Geography Department, Arizona State University, Tempe, AZ 85287 (602-965-3520).

The objectives of the conference are to advance the state of the science by providing the opportunity for communication among investigators in different areas and by providing the ability to simultaneously collect samples for later intercomparison.

The conference will explore five subject areas: (1) Cosmogenic nuclide methods, (2) rock varnish methods, (3) field sampling methodology, (4) laboratory methodology, and (5) application of multiple methods. The conference will emphasize group discussion,

thus oral presentations will be limited to keynote talks on topics within the subject areas. Informal poster sessions will allow participants to share recent research results. The subject areas will also be discussed during two field trips. The first will focus on previous applications of surface-exposure dating methods to glacial and volcanic deposits in the eastern Sierra region. The second will provide an opportunity to compare field-sampling approaches and to actually collect a suite of samples for purposes of intercomparison.

The conference will be limited to approximately 50 active researchers in surface-exposure dating. Interested participants should send a letter of application to either of the co-conveners, including a summary of their related research. The deadline for application is **April 15, 1990**. The registration fee will be approximately $500, and includes food, lodging, and field trips. Limited support will be available for qualified graduate students and overseas participants.

TRANSIENT RESPONSES TO GLOBAL CHANGE: THE GEOMORPHIC AND HYDROLOGIC RECORD

Symposium sponsored by the Hydrogeology and Quaternary Geology and Geomorphology Divisions and half-day Theme Poster Session sponsored by the QG&G Division; Wednesday, October 31, 1990, at the Annual Meeting of the Geological Society of America in Dallas.

While the topic of global change and the concomitant responses at the regional and local levels is an important one today, it is generally recognized that many of these changes will be transient in nature. Earth systems do not always adjust immediately and completely to external forcings. In light of the current concern with the prospect of global climate change, this symposium will focus attention on the potential for time-dependent changes that can be expected in hydrologic and geomorphic systems. The presentations will be a blend of evidence from the following fields: hydrogeology, Quaternary geology, geomorphology, atmospheric sciences, climatology, paleoclimatology, and oceanography. Three major topics will be addressed.

(1) **The Geologic Record of Global Variations in the Hydrologic Cycle:** The focus of this section is to establish a record of events at global scale which have implications for the hydrologic cycle at a regional scale (such as southwestern U.S.). This will establish several time periods during which changes in one or more of the factors controlling the hydrologic system behavior at a regional scale are known to have occurred.

(2) **Actualistic (Modern) Models of Climate Changes and Hydro-Geomorphic Responses: Applications to the Long-Term (Quaternary) Records:** The purpose of this section is discussions of our theoretical understanding of the physical system which suggests the response of regional climate system to global change. Emphasis will be placed upon the representation of processes within various models and the importance of these representations in model results.

(3) **Regional Variations of the Hydrologic system in Response to Global Change:** The focus of this section is the field evidence which demonstrates changes over areas large enough that purely local mechanisms are not exclusive explanations. The focus should be on evidence of the transient response in the system rather than merely the fact that a change has occurred, and emphasis should be on the rates of spatial pattern changes.

Convenors: Stephen Wells, Dept. of Geology, University of New Mexico, Albuquerque, NM 87131, (505) 277-4204; Jack Hess, Desert Research Institute, Suite 1, 2505 Chandler Ave., Las Vegas, NV 89120, (702) 798-8882, and Richard Craig, Dept. of Geology, Kent State Univ., Kent OH 44242, (216) 672-7987.

THIRD INTERNATIONAL GEOMORPHOLOGICAL CONFERENCE AT HAMILTON, ONTARIO, IN 1993

Derek Ford and Brian McCann of McMaster University are organizing the Third International Geomorphological Conference, which will be held at McMaster University, Hamilton, Ontario, from August 23-28, 1993, with a collection of pre- and post-meeting field trips and field symposia. They hope the meeting will be a North American, rather than a Canadian, event and are soliciting broad participation. There are three principal ways to get involved at this stage.

(1) **Organization of pre- and post-conference field trips or field symposia.** The organizers wish to provide a wide variety of trips of 4-10 days' duration to all areas of the continent, especially classic localities that will be of interest to foreign participants. If you wish to offer a trip, send the organizers a broad outline of your plans by **31 March 1990**, and include an estimate of cost.

(2) **Fund raising to assist delegates from developing countries.** You can do your own fund raising to bring specific persons known to you or offer your services and ideas to a fund-raising committee that will be struck in 1990.

(3) **Proposing and organizing symposia at the conference.** A limited number of one-half day (4 hr) slots are available for special symposia at the main conference. Proposals should reach the organizers by **April 30, 1991**.

For other information or to get involved, please write to:

Third International Geomorphology Conference
Department of Geography
McMaster University
Hamilton, Ontario
L8S 4K1
Canada
Telephone (416) 525-9140
FAX (416) 528-5030

CALL FOR PAPERS SEPM - SPECIAL PUBLICATION Quaternary Coastal Systems of the United States

The Society of Economic Paleontologists and Mineralogists and the International Geological Correlation Program Project #274 (Coastal Evolution in the Quaternary) invite proposals for papers to be included in an SEPM Special Publication entitled Quaternary Coastal Systems of the United States. Topics include any aspect of U.S. coastal system occurrence during the Pleistocene and/or Holocene Epochs, such as: modern sedimentary systems; Holocene stratigraphy; Pleistocene stratigraphy; general geologic frameworks of coastal systems; local relative sea-level history; eustatic, isostatic, and neotectonic studies; Pleistocene and Holocene geomorphology; and other terrestrial and marine records of Quaternary coastal systems.

In an effort to achieve maximum coverage of representative coastal systems, the editors encourage the submission of synoptic papers which are broad in scope and regional in scale, as well as those which describe specific local instances of U.S. Quaternary coastal systems.

Interested authors should submit the title and abstract of a proposed contribution to the editors before April 1, 1990. Selection of final contributions will be based on geographic and topical coverage. Authors will be notified of selection by May 15, 1990. Please submit proposals to either of the following.

John Wehmiller
Geology Department
University of Delaware
Newark, DE 19716
(302) 451-2926

Charles Fletcher
Dept. of Geology and Astronomy
West Chester University
West Chester, PA 19383
(215) 436 2570

LAKE BONNEVILLE AND WASATCH FAULT GUIDEBOOK

The Utah Geological and Mineral Survey published the guidebook for field trip 12 at the 1988 GSA Annual Meeting in Denver, **In the footsteps of G.K. Gilbert--Lake Bonneville and neotectonics of the eastern Basin and Range Province**. UGMS Miscellaneous Publication 88-1 is a 120-page book that contains 22 contributions by 15 authors and was edited by Michael N. Machette. Copies are available for $8.50 from Utah Geological and Mineral Survey, 606 Black Hawk Way, Salt Lake City, UT 84108 (801)581-6831.

IN MEMORIAM

Zena Hunter Andrews
August 2, 1989

Charles D. Campbell
December 10, 1988

W. Storrs Cole
June 14, 1989

John J. Fisher
Unknown

Edwin C. Galbreath
January 20, 1989

Donald B. Gould
February 25, 1989

Vincent C. Kelley
December 5, 1988

Frank W. Johnson.
Unknown

HELP FOR BULGARIAN GEOMORPHOLOGISTS

Steve Kite (West Virginia University) attended a joint Bulgarian-North American workshop on regional economic development and environmental management and met many Bulgarian geomorphologists who have an interest in forging ties with North American researchers and broadening their familiarity with our literature in the fields of global change, tectonic geomorphology, landslides, and karst geomorphology. The final resolution of the workshop identified several areas of interaction, including exchange of publications. North American literature has had very limited circulation in Bulgaria, in large part because of the "hard currency" situation. However, we are in a position to make a much greater contribution to their science than at any time in the past 50 yr, and we should take advantage of this opportunity by sharing our reprints, books, and other publications to the fullest extent possible. Send your works to the Institute of Geography, c/o Dr. Ivan Vaptsarov, Bulgarian Academy of Sciences, G. Bonchev Str., Bl. 3, Sofia 1113, Bulgaria. He will disseminate the work to appropriate Bulgarian geomorphologists.

LUBBOCK LAKE 50TH ANNIVERSARY CELEBRATION RESCHEDULED

Extraordinary circumstances have occurred that necessitate the rescheduling of the Lubbock Lake 50th Anniversary Celebration Week to approximately October 14, 1990. This rescheduling provides the opportunity to have the grand opening of the new facilities and public exhibits, in addition to the dedication ceremonies, as part of the Celebration Week. Furthermore, a year-long anniversary celebration is now planned with a series of special events beginning on the local level in October 1989 and culminating with the international focus for October 1990. A circular outlining the expanded plans and schedule will be forthcoming. For more information contact Museum of Texas Tech University, (806)742-2479.